

LIGHTNING DATA CENTER
MINUTES
JANUARY 9, 2004
ST. ANTHONY HOSPITAL
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Quote of the Month:

“A journey of a thousand miles begins with a single step, but so does a fall down the stairs”.

Car Guys on PBS Radio

Members in attendance: Nate Asmus, Jane Becker, John Gartling, Robert Gift, Ken Langford, Gil McDonough, Vicki Middleton, Al Nibbe, Sheryl Olson, George Rossie, Rick Russon, Bill Sanders, Resa Seck, Greg Stewart, Howard Wachtel, Karen Wells, Phil Yarnell.

There are two clinical presentations of lightning injury victims, occurring during August of 2003. Both boys were accompanied by their mothers - one was a 16 year old male with an unwitnessed lightning event in a graupel storm; with lightning. He was found unconscious and then awakening in the hospital. He came to and was able to relay the later events. Physical examination was normal, without burns nor was clothing damaged. His friends said that they smelled burning when they were near him, acutely. This occurred at Herman Lake, above Georgetown, at approximately 12,500 feet (August 16, 2003). The patient said he had no residual effects. He was in school.

The second case was a 17 year old who was directly struck by lightning at the base of Red Cone Pass, at about 12,800 feet. He was unconscious, with respiratory and possible cardiac arrest. His tongue ring was blown out. This was later found to have been swallowed. He had burns on his chest, foot, and his shoe was blown apart. He had an injury to his right tympanic membrane with a partial blow out. A slide presentation, made by the Saint Anthony's Flight for Life staff, was available for the discussion of the patient. Transient (24 hour) dramatic ferning was seen. He also brought some articles of burned clothing. He had no complaints relative to sequelae and felt well. He was back in school - Dr. Howard Wachtel raised the issue of whether cold water should be applied to the burns immediately as the patient said he was smoking from his body.

Dr. Rossie presented a discussion of the neuropsychology of lightning strike injuries. As witnessed by the first two cases, one could not predict the psychological and intellectual disturbances based on the initial injury factors. He noted that neuropsychological tests results tend to be nonspecific and most likely resemble those of traumatic brain injury. Based on the work of Primeau, Engelstatter and Bares of 1995 cognitive impairments including concentration, verbal memory and emotional

regulation have been noted. He noted that psychological disturbances include preoccupation with seemingly physical symptoms, chronic hyper-vigilance, depression, specific phobias, and irritability with temper management issues. He reviewed Engelstatter's more frequent self-reported complaints in lightning victim patients, including memory deficits, sleep disturbance, attention deficits, dizziness, fatigue, numbness, paresthesias and joint stiffness. Dr. Rossie felt that treatment must be multidisciplinary, educative and supportive. He feels also that a significant component may be the patient's preexisting psychological makeup and how this may affect the psychological reactions to lightning electrical injury.

As an educative tool, Dr. Rossie presented a "video camera" analogy of information processing:

- Attention: related to the ability to hold the camera steady and pointed at the subject.
- Concentration: the ability to "zoom in" or "zoom out", sharpen the focus.
- Encoding: relates to the ability to move newly-recorded information from temporary "immediate-memory register" into a more permanent form i.e., storing it on the tape or disc.
- Retention: true memory storage which may involve both an emotional tone memory and an "event" memory, i.e. put the memory tape on a shelf in a file.
- Retrieved: pulling the correct "memory tape" from the file.

Dr. Rossie then discussed cases where the neuropsychological formal testing was either invalid or out of proportion with the patient's functional ability. He discussed the differential of a psychophysiologic response to trauma with amnesic type of syndrome, i.e., a fugue-like state, conversion reaction, disassociative response, versus malingering versus unknown organic effects on the nervous system at the level too fine to be resolved with present methods. Dr. Rossie raised the issue that it might not be so much the effect of the trauma, per se, but the psychological makeup of the person affected by the trauma that may be consideration.

Ken Langford, Lightning Photographer then passed around a lightning photo and noted that the features of the picture had been enhanced, post production, to intensity the dramatic qualities inherent in the scene. For this reason, the image underlying is "not an accurate record" of the actual meteorologic event, it is a digital interpretation of the event. This was in a correspondence from the image photographer, Chris Arndt.

These minutes do not represent official positions of LDC members. The minutes reflect the comments of members present.

Next meeting: Friday, February 13, 2005 at 11:30 A.M. in the Main Auditorium of St. Anthony Central Hospital.

Scheduled speaker: Dr. Richard Mouchantat

Topic: Plastic Surgical Considerations of lightning and electrical injuries.

Respectfully submitted,

Philip Yarnell, MD